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ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: ANTIBODIES WITH ENHANCED ABILITY TO IMMUNOMODULATE CELL FUNCTIONS

(57) Abstract: The present invention relates to a method for the production and the selection of human or chimæric or humanized antibodies or molecules that comprise the Fc region of human IgG, capable of modulating the activity of one or several particular Fc receptors, such as the triggering of inhibitory functions through the human type IIB receptors of IgG (FcγRIIB/CD32).



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K16/00 C07K16/06 A61K39/395

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, MEDLINE, BIOSIS, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 01/77181 A (GLACET ARNAUD ;BELIARD ROLAND (FR); BOUREL DOMINIQUE (FR); FRACTIO) 18 October 2001 (2001-10-18) cited in the application</p> <p>page 13, lines 9-12</p> <p>page 13, line 17 - page 14, line 28</p> <p>page 15, line 22 - page 16, line 7</p> <p>page 18, line 20 - page 20, line 3</p> <p>page 21, line 24 - page 22, line 25</p> <p>page 23, lines 3-8</p> <p>page 32, line 23 - page 34, line 5</p> <p>table 3</p> <p>example 3</p> <p style="text-align: center;">----- -/--</p>	<p>8-12, 20-25, 36-42</p>



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

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O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SHIELDS R L ET AL: "Lack of fucose on human IgG1 N-linked oligosaccharide improves binding to human FcγRIII and antibody-dependent cellular toxicity" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, US, vol. 277, no. 30, 26 July 2002 (2002-07-26), pages 26733-26740, XP002964542 ISSN: 0021-9258 cited in the application abstract page 2673, right-hand column, paragraph 4	1,2,4,7
A	WRIGHT A ET AL: "Effect of glycosylation on antibody function: implications for genetic engineering" TRENDS IN BIOTECHNOLOGY, ELSEVIER PUBLICATIONS, CAMBRIDGE, GB, vol. 15, no. 1, 1997, pages 26-32, XP004016809 ISSN: 0167-7799 page 27, left-hand column, paragraph 4 page 30, left-hand column, paragraph 4 - right-hand column, paragraph 5	1-47
X	WO 99/58572 A (ARMOUR KATHRYN LESLEY ; UNIV CAMBRIDGE TECH (GB); WILLIAMSON LORNA MCL) 18 November 1999 (1999-11-18) examples 6,6b page 7, line 15 - page 10, line 27	1,2,4,5, 7,13,14, 36,37
A	EP 0 481 790 A (WELLCOME FOUND) 22 April 1992 (1992-04-22) page 4, line 49 - page 5, line 32	1-47
A	DAVIES J ET AL: "Expression of G _n TIII in a recombinant anti-CD20 CHO production cell line: expression of antibodies with altered glycoforms leads to an increase in ADCC through higher affinity of FcγRIII" BIOTECHNOLOGY AND BIOENGINEERING - COMBINATORIAL CHEMISTRY, WILEY, NEW YORK, NY, US, vol. 74, no. 4, August 2001 (2001-08), pages 288-294, XP002964541 ISSN: 0006-3592 the whole document	1-47
A	WO 97/28267 A (GRAY GARY S ; REPLIGEN CORP (US); SILVER SANDRA (US); CARSON JERRY (US) 7 August 1997 (1997-08-07) page 8, lines 10-21	1-47

INTERNATIONAL SEARCH REPORT

international application No.

PCT/IB2004/001390

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material

☒

a sequence listing

☐

table(s) related to the sequence listing

b. format of material

☒

in written format

☒

in computer readable form

c. time of filing/furnishing

☒

contained in the international application as filed

☒

filed together with the international application in computer readable form

☐

furnished subsequently to this Authority for the purpose of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7,36,37(partially)8-12,20-25,38-43(completely)

A method for the preparation of antibodies comprising an Fc region of human IgG (as referred to in claim 1) wherein the cell line is YB2/O (ATCC number CRL-1662) or VERO (ATCC number CCL-81), antibodies obtained with this method and the uses of the produced antibody for the manufacture of a medicament according to claims 39-43.

2. claims: 1-7,36,37(partially)13-16,26-30,44,45(completely)

A method for the preparation of antibodies comprising an Fc region of human IgG (as referred to in claim 1) wherein the cell line is CHO (ATCC number CCL-61), antibodies obtained with this method and the uses of the produced antibody for the manufacture of a medicament according to claim 45.

3. claims: 1-7,36,37(partially)17-19,31-35,46,47(completely)

A method for the preparation of antibodies comprising an Fc region of human IgG (as referred to in claim 1) wherein the cell line is K6H6B5 (ATCC number CRL-1823), antibodies obtained with this method and the uses of the produced antibody for the manufacture of a medicament according to claim 46.

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

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